DOCUMENT RESUME

ED 078 307 CG 006 868

AUTHOR Clifford, Margaret M.
TITLE The Effects of Competition on Classroom Performance, Retention, and Interest.
PUB DATE [71]
NOTE 11p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Classroom Research; Cognitive Processes; Educational Interest; *Elementary School Students; Grade 6; Interests; *Learning Processes; Motivation; *Performance; Performance Factors; Research Projects; Retention; Retention Studies; Student Interests; *Student Motivation; Students

ABSTRACT

The effects of competitive treatments on performance, interest, and retention were examined with the use of a ten-day vocabulary task administered to 2,256 sixth graders. The four major objectives of this experiment were: (1) to examine educational competition within a learning, as opposed to a testing, situation; (2) to examine competition using an experimental design, task, procedure, and setting which allow for generalization to present educational situations; (3) to reexamine the effect of educational competition on three dependent variables: performance, interest, and retention; and (4) to examine the difference between competition with a material reward and competition in a game situation without a material reward. Although interest was found to be significantly higher in these treatments than in a control, neither performance nor retention was increased under the competitive treatments. Based on a review of the literature and the results of this study, a model relating task complexity and intrinsic versus extrinsic motivation to increased performance was proposed. (Author)

The Effects of Competition
On Classroom Performance, Retention, and Interest

Margaret M. Clifford
University of Iowa

A review of the literature on the effects of competition in education suggests two major reasons for the lack of closure; we are asking over-simplified questions and using an atheoretical approach in which there appears to be a random selection of tasks and procedures as well as subjects. A meaningful examination of educational competition will require a systematic variation of relevant variables such as homogeneity of competitors, nature of the task, and value of reward or success. A theoretical approach is the most efficient way to identify the crucial factors and suggest means for their manipulation. A second requisite for examining the effects of competition on education is the use of relevant and natural experimental settings.

This study was designed in light of a proposed model resulting from a review and synthesis of competition research. The model indicates that performance increase is a function of motivation which is curvilinear and task-difficulty which is linear. It further suggests that the effect of competitive motivation decreases as task difficulty increases. Our previous studies suggest that although a competitive situation significantly increases performance in a simple manipulative task such as substitutions and cancellations, competition has no effect

on the performance of a grade-appropriate math test. However Ss expressed significantly higher interest in the competitive math task as opposed to the noncompetitive math task. We therefore speculated that given a difficult cognitive task, as opposed to a simple mechanical task, and given time to prepare for performance, a S would do significantly better in a competitive situation as opposed to a noncompetitive one. Underlying this speculation is the assumption that the S with relatively high interest in the task will use preparation time more advantageously than will the S with low interest. In other words, we speculated that although competition may not affect performance in a testing situation per se, it may affect performance in a learning situation. The distinction between testing and learning was based on the presence of a time interval between the announcement of the competitive task and the performance of the competitive task.

There were four major objectives for this experiment: (1) to examine educational competition within a learning as opposed to a testing situation, (2) to examine competition using an experimental design, task, procedure, and setting which allow for generalization to present educational situations. (3) to reexamine the effect of educational competition on 3 dependent variables: performance, interest, and retention; and (4) to examine the difference between competition with a material reward and competition in a game situation without a material reward.

Sixty-six Milwaukee fifth-grade classes having at least 80% white enrollment participated in the study. The number of Ss from whom data was collected totalled 2,256.

We used a vocabulary task in which for each of 10 consecutive school days Ss were given a list of 20 words and one full day to prepare for a test on those words. Ss were thus exposed to a total of 200 words. The development of the 10 daily tests corresponding to the 10 daily study lists resulted in means, standard deviations, and intercorrelations which suggested a high degree of parallelism. (No between-test correlation was less than .80; 33 of the 44 intercorrelations were .85 or higher.) Control for a classroom environment was insured by having 66 teachers conduct the vocabulary task as a regular 2-week learning unit according to the directions specified in the manuals provided. There were 3 conditions: a control, a competition-with-reward, and a competition-with-game. To establish the competitive situations teachers were asked to order all Ss according to reading ability and on the basis of this ranking, divide the class into four relatively equal-sized homogeneous groups. Thus, there were 4 separate competitive groups in each class. A S was asked to compete with only the members of his ability group. It was decided that such a grouping procedure was more representative of classroom practices than the use of a pretest measure.

The basic procedure for administering the vocabulary-learning task was standard across treatments. For each of ten consecutive school days Ss in all three treatments received a 20-word Study List. The following day Ss were given a quiz on ten of the twenty words; they then exchanged and scored each other's papers. The treatments were administered on the basis of these daily quiz scores. In the control

condition the papers were simply returned to the Ss and the next day's word list was distributed. In the competition-with-reward treatments candy life-savers were daily awarded to the high-scoring S in each of the 4 ability groups. In the competition-with-game treatment the game TABS was played after each daily quiz. This was a score-board game which emphasized the rank-ordering of players within each group and gave a special score advantage to the highest players. Scoring was cumulative over the 10 day task, but no material reward was given beyond the recognition afforded by the publicly displayed score-board. Immediately after the tenth and final quiz, a three-item, 3-option interest measure was administered. This simply consisted of three questions which were assumed to measure the Ss' expressed interest or liking for the task. Two and a half weeks later the experiment was concluded with the administration of a 50-item follow-up test. The follow-up measure was compiled by randomly selecting five items from each of the 10 daily quizzes.

Two major predictions were made for each of the three dependent variables (i.e., performance, interest and retention): (1) Both competition-with-reward and competition-with-game are more effective than no competition in a complex task if preparation time is provided. (2) Competition-with-game is at least as effective as competition-with-reward.

Two planned comparisons, directly related to the major predictions, were used to test the joint effect on all three dependent variables. The first planned comparison examined the difference

between the control condition and the combined competitive treatments (Control vs Reward and Game). The second planned comparison examined the difference between the Reward treatment and the Game treatment (Reward vs Game).

The multivariate test for the planned comparison between the control and the combined competitive treatments resulted in $F = 10.04$; $df = 3,71$; $p \leq .0001$. Only one of the three corresponding univariate analyses for the dependent variable resulted in significance. In accordance with prediction the competitive treatments, as opposed to the control, significantly increased interest. However, contrary to prediction neither performance nor retention were noticeably improved with the use of competition.

The second planned comparison showed there was no difference between the effects of Reward and Game competition on performance, interest, or retention.

Although the mean performance on the control treatment was lower than both of the competitive treatments for nine of the ten days, the difference was indeed trivial; on the average the daily within-cell standard deviations were approximately 1.0 while the average daily difference between control and treatment performance was less than .2.

Only very small correlations were found between any of the dependent variables and sex. IQ showed relatively high correlation with performance and retention, but it was found to have a -.12 correlation with interest.

The results of this study in terms of our original model seem to suggest that either the task was so difficult that competitive

motivation could not affect it or that the motivation factor was so weak that it was virtually nonoperative. On the basis of the significant interest effect we agreed that the motivation factor was operating in the competitive treatments and thus turned our attention to the first alternative, the task being so difficult that competitive motivation could have no effect. Consideration of this suggested the need to distinguish between intrinsic and extrinsic motivation and the corresponding need to systematically examine classroom learning in the light of a distincition between intrinsic and extrinsic motivation factors.

Admittedly, a distinction between intrinsic and extrinsic motivation is difficult to make, particularly in classroom learning situations. In the performance of most tasks, elements of both are present. But we decided to associate intrinsic motivation with factors which have a relatively greater effect on the learner's ability as opposed to the learner's affect. In terms of this distinction the competitive treatments used in this experiment would be classified as extrinsic. They changed the setting of the task and the students affect, but did not have a direct effect on the students ability to perform the task.

Using this distinction between intrinsic and extrinsic motivation, our original model, and the results of this study, we revised our performance-increase model. The new model suggests a linear relationship between task-complexity and the relative importance of intrinsic and extrinsic motivation. The revised model indicates that intrinsic motivation becomes increasingly

important as task-complexity increases, that extrinsic motivation becomes decreasingly important as task-complexity increases, and that intrinsic motivation becomes increasingly important as extrinsic motivation becomes decreasingly important. The major implications of the revised model are first the need to identify and distinguish between intrinsic and extrinsic variables which, in an educational setting act as motivators; and second, to identify ways of effectively manipulating these variables dependent upon the nature of the task and cognitive and affective nature of the learner.

AERA, 1971, NEW YORK, NEW YORK

HAND OUT FOR

EFFECTS OF COMPETITION ON CLASSROOM PERFORMANCE, RETENTION, AND INTEREST

Margaret M. Clifford

University of Iowa

ABSTRACT: The effects of competitive treatments on performance, interest, and retention were examined with the use of a ten-day vocabulary task administered in sixty-six fifth grade classrooms. Although interest was found to be significantly higher in these treatments than in a control ($p \leq .0001$), neither performance nor retention was increased under the competitive treatments. Based on a review of the literature and the results of this study, a model relating task-complexity and instrinsic vs extrinsic motivation to performance-increase was proposed.

CONDITIONS:

1. Control (C)
2. Competition with Reward (R)
3. Competition with Game (G)

LEARNING TASK:

Ten-day vocabulary learning task requiring a study-quiz routine in which Ss were to learn the meaning of 20 words and be quizzed on 10 of them the following day.

DEPENDENT MEASURES:

1. Performance (P)
2. Interest (I)
3. Retention (Rt)

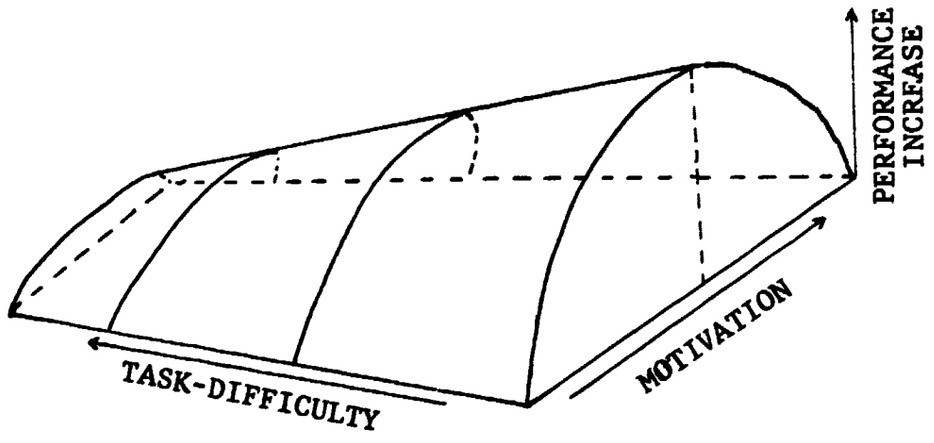

Fig. 1 Relation of performance-increase to task-difficulty and motivation.

TABLE 1

Multivariate and Univariate Analyses of Variance for Two Planned Comparisons on Three Dependent Measures

	df	MS	F	p
1st Planned Comparison				
(C vs R & G)	3/61		10.04	≤.0001
Performance	1/63	.54	.64	≤.43
Interest	1/63	4.70	29.24	≤.0001
Retention	1/63	4.01	.18	≤.67
2nd Planned Comparison				
(R vs G)	3/61		.84	≤.47
Performance	1/63	.002	.003	≤.96
Interest	1/63	.37	2.32	≤.13
Retention	1/63	1.47	.07	≤.80

TABLE 2

Treatment Means for Performance, Interest, and Retention

Treatment	Dependent Measures		
	Performance	Interest	Retention
Control	5.72	2.41	30.85
Reward	5.92	2.63	31.55
Game	5.90	2.57	31.19

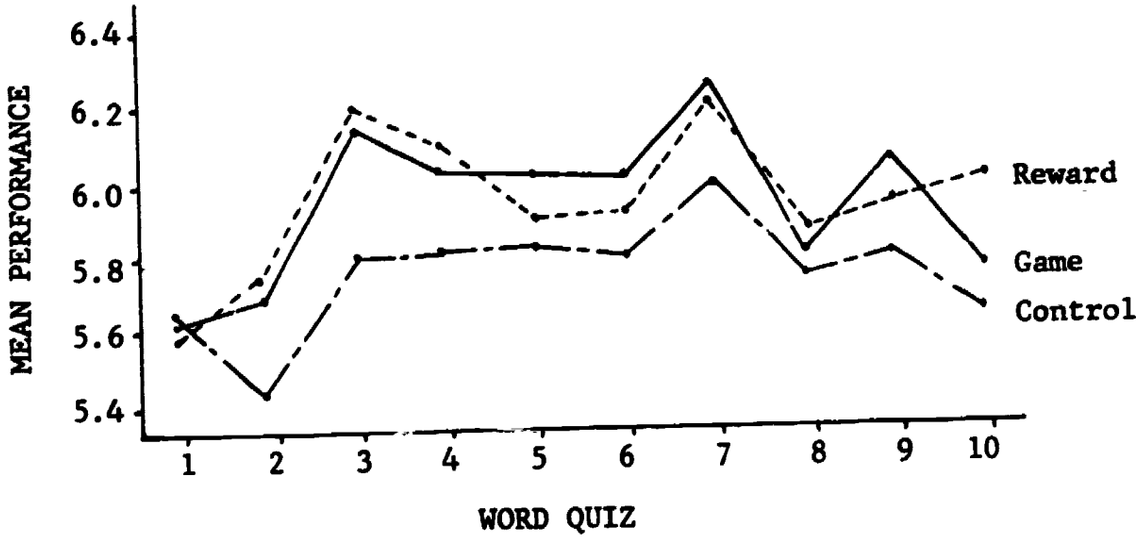

Fig. 2 Mean performance on a set of 10-item Word Quizzes administered under three conditions.

TABLE 3

Pooled Within-Cell Correlations for Dependent Measures, Sex, and IQ

	Sex 1=M 2=F	IQ	Performance	Interest	Retention
IQ	.07				
Performance	-.08	.75			
Interest	.01	-.12	-.09		
Retention	.05	.77	.88	-.10	1.00

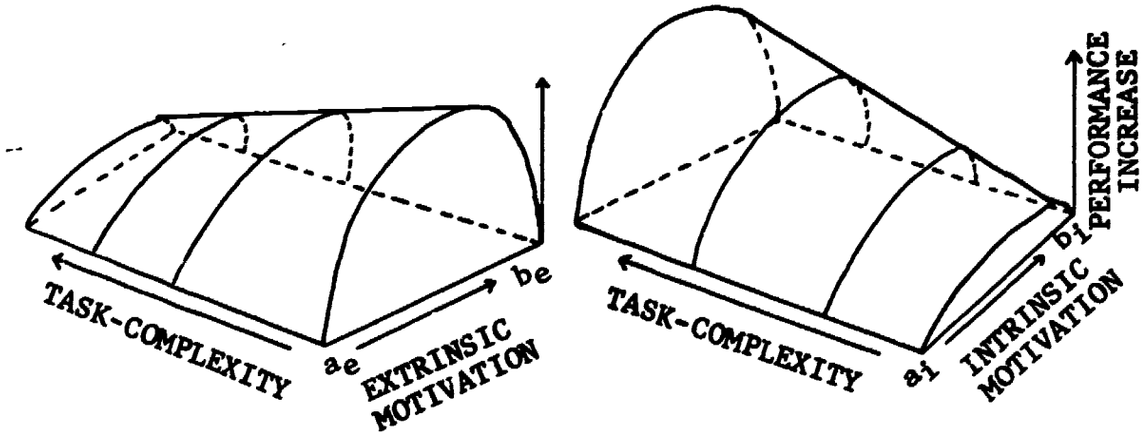

Fig. 3 Relation of performance-increase to task-complexity and intrinsic and extrinsic motivation.